

ON A NEW SPECIES OR FORM OF EUCALYPTUS.

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(Plate lxxv.)

EUCALYPTUS MARSDENI, f. vel sp. nov.

Arbor, 30'-50' altitudine, cortice fibroso inferne superne lævi, foliis petiolatis, lanceolatis, acuminatis, falcatis, obliquis, fere membraneis; cymis axillaribus; pedunculis 4''' longis, pedicellis $1\frac{1}{2}$ ''' ; operculo hemisphærico, umbonato; fructibus hemisphæricis, valvis parum exsertis.

A tree, 30 feet high in specimen observed, and probably would attain a height of 60-80 feet when fully grown.

Seedling.—Cotyledons very small, orbicular-reniform, entire, purplish on undersurface, glabrous. Leaves opposite, decussate, obtuse, shortly petiolate, lanceolate, venation pinnate, rather oblique, edges sinuate. Stem reddish, and both it and the leaves covered with fine, stellate hairs.

Juvenile leaves of a more advanced stage than in the small seedling are alternate, petiolate, narrow-lanceolate, acuminate, glabrous. *Mature leaves* alternate, petiolate, lanceolate, falcate, acuminate, oblique, greyish on drying, almost membranous, occasionally shiny, and having a pleasant, aromatic scent. Laminæ 6"-8" long by $\frac{3}{4}$ " broad, petiole slender, $\frac{1}{2}$ " long. Lateral veins oblique, alternately fine, intramarginal vein fairly distant from edge.

Inflorescence axillary, peduncles $\frac{1}{2}$ " long, with rather few flowers in head, 6-9; buds turbinate, 5''' long, operculum hemispherical, shortly acuminate. Stamens all fertile, anthers kidney-shaped. Fruits hemispherical, 3''' in diameter, rim domed, valves small, slightly exserted.

Bark of an unusual character for a Eucalypt. While it falls in the group of the stringy-barks, yet it is laminated, with a sort of ochreous deposit on the outer surface of each layer. Inner

bark very hard and compact. But while the trunk and lower branches have such bark, that of the upper branches and branch-lets is smooth and greyish, so that the tree is really a half bark.

Timber light brown in colour, fairly heavy, close, straight in the grain, annual rings prominent in the young stage, planes and dresses well, and should be useful for technical purposes; gum-veins few.

Locality.—Toongabbie, New South Wales, at the rear of the Public School, on the Wianamatta clay.

Remarks.—As seen from the description, this form of Eucalypt, on a cortical classification, seems intermediate between the smooth-barks and the stringy-barks. The timber has not the texture of that of the stringy-barks, but more nearly resembles that of *E. viminalis* in physical characters. The early buds resemble those of *E. obliqua*, but there is no resemblance in the mature stage. The mature leaves are generally markedly oblique. The fruit resembles that of *E. eugenioides*, but it tapers more into the pedicel, and is not so flat; nor are the fruits so clustered on the peduncle. The seedling is intermediate between those of *E. eugenioides* and *E. Moorei*; and, in its hairy seedling-leaves and reniform cotyledons, approximates strongly to the string-barks. The reniform anthers also place it in that category, but the bark, timber, and oil, are quite distinct from those of this class. As, so far, only a single tree is known, one is strongly inclined to conclude that it is either a hybrid or a sport. Strong colour is lent to the hybrid theory by the fact of its possessing so many of the characters of the stringy-barks, especially in the seedling-stage; yet differing from them in others in the mature stage, as for instance in the bark, oil, and timber. Since the only known tree has, unfortunately, lately been cut down, further comparison is at present impossible. Now that a description has been published, search may reveal further specimens, and more definitely establish its status. The tree was a young one, about 12-15 years old, and growing on land that had been mostly cleared, but with a few well grown trees of *E. hæmastoma*, *E. resinifera*, and *E. siderophloia* in proximity. Other trees near by

were *E. crebra*, *E. eugenoides*, *E. hemiphloia*, *E. punctata*, and *E. tereticornis*. I have named this form or species, tentatively, *E. Marsdeni*, after the Rev. Samuel Marsden, the first incumbent of St. John's Church, Parramatta.

Oil.—Mr. H. G. Smith reports that the oil of this *Eucalyptus* was obtained by steam-distillation, in the ordinary way, from the leaves and terminal branches. It was somewhat thick and viscous, having almost the viscosity of castor oil. It has little resemblance, either in appearance or constitution, to the majority of ordinary *Eucalyptus* oils, but is more closely allied to the oils distilled from *E. nova-anglica* and a few others. It has no resemblance to the oils of the members of the *E. tereticornis*-group. Cineol was practically absent, and phellandrene could not be detected. The amount of oil available did not permit of the active terpene being isolated in a pure condition, but it is probable that dextro-rotatory pinene occurs in small amount.

Only 38 pounds of material were received for distillation, from which 4 ounces of oil were collected, equal to 0.66 per cent. The oil was but little coloured, and had a fairly pleasant odour. It gave the following results:—

Specific gravity at 15°C. = 0.9469.

Rotation $\alpha_D = +4.8^\circ$.

Refractive index at 20°C. = 1.4989.

Insoluble in 10 volumes 80 per cent alcohol at 16°C.

Saponification number of esters and free acid = 2, so that esters were practically absent. The small amount of free acid was removed, and this gave a strong odour of butyric acid. The phenol gave the reactions for Tasmanol, but it is probable that both phenols occur. The indications are that the oil consists largely of sesquiterpenes. Probably some high-boiling alcohols are also present, as indicated by the odour.

I have to record my sincere thanks to Messrs. R. T. Baker and H. G. Smith for much help in preparing this paper.

EXPLANATION OF PLATE LXXV.

Portion of branchlet of *Eucalyptus Marsdeni*, f. vel sp. n.